

Claims:

1. A system for measuring a property of a surface, the system comprising:
 - a plurality of survey probes; and
 - a survey controller configured to program the same survey probes for seismic or electrical measurements of the surface.
2. A system for measuring a property of a surface, the system comprising:
 - a plurality of survey probes, each having a unique identifier; and
 - a survey controller configured to automatically poll the survey probes to obtain each identifier and determine a relative order the probes.
3. The system of claim 2, each survey probe configured to:
 - disconnect a downstream neighbor survey probe and enter an idle state;
 - report its unique identifier to the survey controller if in the idle state and in response to a polling command from the survey controller; and
 - change to a state other than the idle state after reporting its unique identifier.
4. The system of claim 2, the survey controller configured to assign and transmit a different, unique identifier to each survey probe.
5. The system of claim 2, the survey controller and survey probes configured to communicate wirelessly.
6. The system of claim 2, the survey controller and survey probes being connected by a first number of conductors, the survey probes being configured to perform a second number of simultaneous measurements of the surface, and the second number not being limited by the first number.

7. The system of claim 2, the survey controller being remotely accessible through a computer network for remote control of the survey controller and the survey probes.
8. The system of claim 2, the survey probes being connected to the survey controller through three conductors, two conductors supplying power and a third conductor acting as a communications bus.
9. A system for measuring a property of a surface, the system comprising:
 - a survey controller; and
 - a plurality of survey probes configured to:
 - (a) collect signals associated with the surface;
 - (b) digitize the signals to form digital data; and
 - (c) store the digital data for later transmission to the survey controller.
10. The system of claim 9, where the survey probes are configured for performing both electrical and seismic measurements, and the signals comprising seismic or electrical signals.
11. The system of claim 9, the signals associated with the surface comprising signals that are generated in response to the surface being stimulated.
12. The system of claim 9, the survey controller and survey probes configured to communicate wirelessly.
13. The system of claim 9, the survey controller sending data to individually program survey probes to generate a stimulus simultaneously or according to another programmed timing scheme.
14. The system of claim 13, the stimulus comprising injection of current.

15. The system of claim 9, the survey controller sending data to individually program survey probes to form digital data and store the digital data according to a programmed timing scheme.
16. The system of claim 9., the survey controller and survey probes being connected by a first number of conductors, the survey probes being configured to perform a second number of simultaneous measurements of the surface, and the second number not being limited by the first number.
17. The system of claim 9, the survey controller being remotely accessible through a computer network for remote control of the survey controller and the survey probes.
18. The system of claim 9, the survey probes being connected to the survey controller through three conductors, two conductors supplying power and a third conductor acting as a communications bus.
19. A system for measuring a property of a surface, the system comprising:
 - a survey controller; and
 - a plurality of survey probes configured to:
 - (a) collect signals associated with the surface; and
 - (b) sample and hold the signals for later transmission to the survey controller.
20. A system for measuring a property of a surface, the system comprising:
 - a survey controller; and
 - a plurality of individually-addressable survey probes;
 - where the survey controller is configured to:
 - (a) transmit a first signal to individually program survey probes to conduct one or more steps for measuring the property of the surface; and

(b) transmit a second signal to cause survey probes to conduct the one or more steps according to a timing sequence.

21. The system of claim 20, the survey controller and survey probes configured to communicate wirelessly.

22. The system of claim 20, the survey controller further configured to transmit a third signal to diagnose survey probes.

23. The system of claim 20., the survey controller and survey probes being connected by a first number of conductors, the survey probes being configured to perform a second number of simultaneous measurements of the ground, and the second number not being limited by the first number.

24. The system of claim 20, the survey controller being remotely accessible through a computer network for remote control of the survey controller and the survey probes.

25. The system of claim 20, the survey probes being connected to the survey controller through three conductors, two conductors supplying power and a third conductor acting as a communications bus.

26. A system for measuring a property of a surface, the system comprising:
a survey controller; and
a plurality of individually-addressable survey probes;
where the survey controller is configured to transmit a diagnostic signal to individual survey probes to diagnose the individual survey probes.

27. A system for measuring a property of a surface, the system comprising:
 - a survey controller; and
 - a plurality of survey probes whose position relative to one another is automatically determined.
28. The system of claim 27, further comprising a transmitting beacon and where the position is determined using a signal from the transmitting beacon.
29. The system of claim 27, further comprising a radio frequency identification (RFID) system coupled to the probes and a Global Positioning System (GPS), the position being determined by combining identification information from the RFID system with positional location from the GPS.
30. The system of claim 27, the survey probes being in motion.
31. A system for measuring a property of a surface, the system comprising:
 - a plurality of survey probes; and
 - a survey controller configured to supply power to the survey probes using a power conduit;

where the survey probes automatically electrically disconnect from the power conduit while measuring the property and operate using an internal source of power when disconnected to reduce noise.
32. A system for measuring a property of a surface, the system comprising:
 - a plurality of survey probes; and
 - a survey controller that is remotely accessible through a computer network for remote control of the survey probes, the remote control comprising:
 - (a) remote initiation of a measurement of the property of the surface; and

- (b) remote collection of data from a measurement of the property of the surface.

33. The system of claim 32, the remote control further comprising remote processing of data from a measurement of the property of the surface.

34. The system of claim 32, the remote control further comprising remote diagnostic testing of survey probes.

35. The system of claim 32, the computer network comprising a wireless network.

36. A system for measuring a property of a surface, the system comprising:
a plurality of survey probes; and
a survey controller configured to program the plurality of survey probes to simultaneously apply a stimulus to the surface in an arbitrary pattern.

37. The system of claim 36, the pattern comprising a line pattern.

38. The system of claim 36, the pattern comprising a moving wave pattern.

39. A method for measuring a property of a surface, the method comprising:
collecting signals associated with the surface using a plurality of survey probes;
digitizing the signals using the plurality of survey probes to form digital data; and
storing the digital data using the plurality of survey probes for later transmission to a survey controller.

40. The method of claim 39, the method further comprising:
polling the survey probes using the survey controller to automatically:

- (a) obtain an identifier of each survey probe; and
- (b) determine a relative order of the survey probes.

41. The method of claim 39, where the survey controller and survey probes are connected by a first number of conductors, and the method further comprising performing a second number of simultaneous measurements with the survey probes, the second number not being limited by the first number.
42. The method of claim 39, the method further comprising:
controlling data acquisition, data processing, or data collection associated with the survey controller remotely over a computer network.
43. The method of claim 39, the survey probes being connected to the survey controller by one or more conductors that supply power, and the method further comprising automatically disconnecting the survey probes from the one or more conductors while measuring the property and operating using an internal source of power when disconnected to reduce noise.
44. The method of claim 39, the method further comprising automatically determining the relative position of the survey probes.
45. The method of claim 44, where the relative position is determined using (a) a transmitting beacon or (b) a radio frequency identification (RFID) system and a Global Positioning System (GPS).
46. The method of claim 39, the method further comprising performing a seismic and electrical measurement of the surface using the same survey probes.